

### ABSTRACT

An apparatus for encoding data includes a receiving section, a signal-deteriorating factor generation section, and a data-encoding section. The signal-deteriorating generating section generates a signal-deteriorating factor and includes a phase-shifting section to shift a phase of data received at the receiving section. The data-encoding section obtains encoded data by performing encoding processing on the data in which the signal-deteriorating factor is generated and includes an encoding section to perform encoding by use of sub-sampling on the data whose phase is shifted by the phase-shifting section.